Using Simple Open Source Computers and Free software to provide Innovative Computer Science lessons

Student Dissertation

SAT: Using Simple Open Source Computers and Free software to provide Innovative Computer Science lessons (Claire Griffiths)

Cloud created by:

Dr Simon Ball
4 February 2014

The presentation will take the form of a slide presentation leading to a web tour of a bespoke multimedia website featuring text, images, related links and video clips of help tutorials for use in Innovative Computer Science lessons. The website will illustrate a selection of Open Source Computing devices, free programming languages and Open freely sharable teaching resources which can be used to develop Innovative Computing lessons. The presentation will explain why they illustrate the concept of Innovation in Open Education.

The Royal Society Report on the Provision on the Education in Computing in UK Schools summarises clearly why Computer Science needs to be taught in an improved way in schools to counter the serious fall in the study of Computer Science in Secondary Schools and subsequently at University. There are therefore strong reasons for a new approach to be taken in its presentation in schools i.e. a new innovative approach which will engage children in the subject (Royal Society, 2012). The presentation will touch on this issue.

Throughout the presentation there will be an intention to show the positive initiatives being adopted by the Scottish and UK governments to address the situation faced by Computing Science Education rather than dwell on mistakes of the past. Please note the Scottish Government deals with Education as a devolved issue so both governments are dealing with the situation in their separate ways. Continuing the theme of the conference the focus will be on those initiatives which feature open source and free resources.
Computing at Schools Scotland Organisation has been included in the website artefact as it has recently benefited from Scottish Government funding to provide targeted Continuing Professional Development (CPD) for Computing Teachers. The training includes the promotion of free programming software e.g. Scratch. CAS Scotland members in partnership with British Computer Society (BCS) Academy of Computing and the Royal Society of Edinburgh (RSE) have been involved in the development of materials utilising Free Programming Software such as Scratch and BYOB. The Ofsted Report (2011) stated the importance of staff training and the need for systematic planning in the updating of ICT and the training of staff to promote innovation therefore the CAS Scotland work is essential to the promotion on Innovation in Computing Science.
To view the website under development go to http://computingclubideas.wordpress.com/
N.B. Be aware though that just like Computing Science this website will be constantly changing (in response to your comments and new ideas) until the day of the presentation on Saturday

Tags

Arduino CAS Code Academy Computing Greenfoot Innovation Python Raspberry Pi Scratch Technocamps technology enhanced learning

In Cloudscapes

15th February at 3.45 p.m. and beyond !
References

Ofsted Inspection 2008-11 (2011) ICT in schools 2008, No. 110134, Manchester, Ofsted [online]. Available at http://www.ofsted.gov.uk/filedownloading/?file=documents/surveys-and-good-practice/i/ICT in schools 2008-2011.pdf&refer=1 (Accessed at 8 January 2014)
'Royal Society demands radical overhaul of ICT in schools' 2012, Education (14637073), 452, p. 2, UK & Ireland Reference Centre, EBSCOhost, viewed 3 February 2014.
Royal Society (2013) Introduction to Computer Science [Online] Available at http://www.royalsoced.org.uk/1034_ComputingScience.html (Accessed 8 January 2014).

Extra content

+ Add extra content

Embedded Content

Multimedia Poster created for the Presentation Using Simple Open Source Computers and Free software to provide Innovative Computer Science lessons

Multimedia Poster created for the Presentation Using Simple Open Source Computers and Free software to provide Innovative Computer Science lessons
Accessible Alternative
added by Claire Griffiths

An Example page from the blog site Using Simple Open Source Computers and Free software to provide Innovative Computer Science lessons

An Example page from the blog site Using Simple Open Source Computers and Free software to provide Innovative Computer Science lessons
Accessible Alternative
added by Claire Griffiths

+ Add embedded content

Contribute

Discussion (9) | Links (2) | Academic References (0)

Nicola Morris
9:43pm 14 February 2014 Permalink

I enjoyed looking at your site. As this isn't my field I found it a useful explanation and have noted some useful links. Look forward to hearing your talk. I've noticed that a few of us have developed sites . I wonder if we should have a thread in the future plans forum re how to take this forward.

Dr Simon Ball

OU H818 'The Networked Practitioner' online conference 2014

+ Add to a Cloudscape

Improve this cloud

+ Add a tag

+ Add extra content

+ Add embedded content

+ Add link

+ Add reference


7:33pm 15 February 2014 Permalink

Following the live presentations, we asked each speaker to respond to questions posed by audience members. In the short time available, it was not possible to put all of the questions submitted to the speaker for a response. We asked all speakers if they would respond to the unanswered questions here on Cloudworks. Here are all of the questions asked during the session:

- have you trialled this with any organisation
- Who are you primarily targetting with this site? Schoolteachers?
- who do you see this being of most use for?
- I am intererest in Webmaker and wondering if that is something you might be looking into/adding to your site? Mozilla Webmaker https://webmaker.org/
- Would you consider opening up your site to others to contribute to?
- are there similar sites for adults?
- What tool would you recommend to teach web design to schoolchildren?


Clem WIlkinson
2:18pm 18 February 2014 (*Edited 4:15pm 18 February 2014*) Permalink

Hi Claire,

Thanks for a really interesting presentation and thanks for all the resources you have placed on your website. Here's the Webmaker.org site that I mentioned. I've been approached to help work on project starting up (slowly) later this year with regard to using webmaker (and I'd hope to say Digital Literacies) in schools. So, I'd be very interested to follow your progress and share (if the project here gets off the ground). If you are interested you can contact me via Twitter @C01Clem or about.me/c01.

Was almost late leaving for work watching the video on the difference between Raspberry Pi and Arduino. Interesting as I saw a computer in a 'wooden' box with a lid the day before your presentation, no bigger than your average paperback. It was hooked up to Wifi, USB keyboard, mouse and a USB screen. Apparently it has the ports for a touchscreen too. All running Firefox OS (desktop) which I didn't even realise existed.

[Update]

Just been sent the link for the system running Firefox OS. It's APC Paper


Claire Griffiths
9:32pm 18 February 2014 Permalink

Clem

I have been looking at the webmaker site. The webmaker teaching kit templete teaches the different elements but all in one template at once. I have approached web design from a very simple level adding each type of code a step at a time.

The teachng kit tempate I have looked at worked fine but is too high a level for the students (S5 16-17 yr olds) I have. It had too many concepts in the 202 lines of code for my classes. I introduced the code in small chucks e.g. unordered/ordered lists, colouring text etc... I limited the meta information too.

As so much of early web design is making mistakes not adding opening and closing tags etc... limiting the no. of lines to look through was the best way. They quickly self-corrected and so each lesson progressed.

My motivation for the website was to provide accessible resources which demystified some of the terminology e.g. arduino etc....I liked the simple videos I embedded in the artefact website.I like interface design,colour schemes, projects etc.... Please that you liked the Ardunio comparison video. I willlook for others of a similar level and vein.

I found the explore section had more examples which I can use. The beginner movie poster looks good. Found a popcorn section. I can see this website will take me some time to understand. I will add a link to on the website.


Claire Griffiths
9:47pm 18 February 2014 Permalink

Here are all of the questions asked during the session:

- have you trialled this with any organisation
  I have spoken to people i know as Computing at Schools about the concept. I have not sent them the website yet.
- Who are you primarily targetting with this site? Schoolteachers?
  I am aiming at school teachers and not just computing specialists.
- who do you see this being of most use for?
  Non-specialist who want a way into the jargon of raspberry pi or adrduino etc... I would also like to improve digital literacy skills among all teachers including primary level, which is my background.
- I am intererest in Webmaker and wondering if that is something you might be looking into/adding to your site? Mozilla Webmaker https://webmaker.org/
  I will add a link to this resource. I found the Explore section had more examples I felt I could use at present.
- Would you consider opening up your site to others to contribute to?
  I am thinking of adding a contact section which could then be an opportunity for people to add ideas. Each of the pages and the posts have an opportunity to comment. Once they they have been passed by the administrator (me) they appear in the site.
- are there similar sites for adults?
  Depends what the adult wants to know. If they don't know what arduino is then the site works for them too. I am re-phrasing the pages once the course is over so they are more general.
- What tool would you recommend to teach web design to schoolchildren?
  I use note pad ++ and teach code in simple chunks ordered and unordered lists etc...

Ian Hoffman
7:42pm 20 February 2014 Permalink

Hi Claire

It's getting on for 10 years since I taught computing in Edinburgh and at that time there was a lot of noise about moving to open source software solutions to keep costs down but it didn't amount to very much in real terms. Do you think that much has changed since then in schools? - eg. Schools/LAs ditching MS Office in favour of OpenOffice? It's maybe early days yet but do you know if the Pi/Arduino are selling well in Scottish schools?

Claire Griffiths
8:37pm 22 February 2014 Permalink

In Scotland we will soon have reliable access to Office 365 through our glow accounts. This year it is all on hold as e-portfolios and accounts etc.. are migrated across. We are on a different email system to the students at present so that contact has fallen back too.

The Glow e-portfolio was the free open source blogging tool Wordpress but it was decided to go for a bespoke version before last summer. No sign of it yet so we are using Powerpoint for ours.

We had the free Libre office installed on one room of computers as some of the pupils didn't have Microsoft Office at home nd it was thought this would help. It didn't.

- Due to the method of installation Libre office became the default when clicking on any Microsoft Word file so they were saving their work as Libre office (unless they actively chose not to).
- If a class teacher then opened Microsoft Word and then went to open submitted work they only saw the Microsoft Word files not |Libre Office. This led to students getting in trouble for not submitting work so we took it off.

Raspberry Pis- I am trying. There is considerable addition with each Pi for connectors, Wifi, USB etc (about £60 plus access to a screen). I have lots of Google pis but it is getting the peripherals which is slowing me down. We just bought an Arduino kit at school to play with and it was £90 for one. Don't start me on the cost of Lego Mindstroms which i would love to use. I am accesing the set at the local college for one workshop for a Coderdojo I run.

I will keep trying. STEM funds are an option I am pursuing at present.

Cara Saul
12:56am 25 February 2014 (*Edited 12:57am 25 February 2014*) Permalink

Re cost of Lego Mindstorms - have bought original mindstorm 'controller bricks' off eBay. Models themselves much more flexible - not a coder myself but the old software seems fine for basic concepts

Re additional costs for peripherals for Raspberry Pis - have you considered using Freecycle and Freegle? Of course you will have to get things PAT tested but can be good for kit. Parents also good source of preloved tech. Invest in PAT tester to avoid wait for

annual PAT testing team. Regulations require suitably qualified person to do testing. Courses to become PAT tester £150 -£200

Claire Griffiths
11:17pm 25 February 2014 Permalink

I love the idea of Mindstroms if it wasn't for the cost. The last time I used Lego in school was Lego Technics a long time ago and we got 50% off the cost of the kits and we could get a discount ourselves too.

I am using Lego Mindstomrs with a coding club (Coderdojo Moray) I run and recruting the help of some Uni students to help. The Uni has kit I can use too so no cost there.

I feel installing software is the real block. We can't use many sites because of this. I even had to special dispensation to use blogs on one of my jobs using the County intranet system. Everyone else gets 15 minutes a day!!!

Contribute to the discussion

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